Oxygen Radicals and Tissue Injury

Proceedings of a Brook Lodge Symposium, Augusta, Michigan, USA, April 1987

Edited by B. Halliwell

Federation of American Societies for Experimental Biology; Bethesda, Maryland, USA, 1988

148 pages.

One's initial reaction on receiving this little book for review in early 1989 is that it is great pity that it has taken nearly two years from the time of the symposium on which it is based for the material to appear. This reaction is however tempered upon reading the book by the excellence of the material, the authoritative standing of the authors of each of the component papers, and by the fact that much of the content is a presentation of seminal material in the subject area which has been only somewhat modified in the interim time by new discoveries.

The explosion of interest in oxygen radical biology and the potential for a radical-mediated component in the aetiology of many disease processes led the Upjohn Company to sponsor this symposium in 1987. The possibility "to envision the development of unique pharmacological agents with free radical scavenging or antioxidant properties for use in treatment of human disease" was the over-riding reasoning that stimulated this interest. In the resultant book there are to be found papers which, in general, provide a useful assembly of much of the basic facts upon which our understanding of free-radical biochemistry is based, but in addition to providing the novice in the field with excellent initial source material, there is also much to interest the specialist and those that may already be working in some related field. Thus there is expert coverage of the basics of oxygen radical generation, peroxidation of lipids, and of the role and importance of iron in these processes. Subsequent sections deal with the role of oxygen radicals in the oxygen burst in phagocytes, the possible role of free radical events in ischaemia and reperfusion injury in cardiac tissues, kidney, in the brain and central nervous system, and in Parkinson's disease, and the role of calcium in lipid peroxidation. It is somewhat disappointing that there is little treatment of the important area of free radical events in tumor initiation and promotion and the significance of this in the pathogenesis of cancer.

A.T. Diplock

Anti-Inflammatory Drugs from Plant and Marine Sources

Agents and Actions supplements, vol. 27

by D.H. Lewis

Birkhäuser Verlag; Basel, 1989

373 pages. 96.00 Sw.Fr.

This volume, printed by the camera-ready process, is concerned with rheumatic diseases. The author correctly points out that the drugs in clinical use at present are unsatisfactory in many ways (not least

their inability to influence progression of disease) and that plant materials still hold great interest as sources of products of direct value, or as starting points for the synthesis of more effective drugs.

The book begins with an introduction to the rheumatic diseases. The authors writes with a simple and easy style, but puts over the main concepts well. The difference between acute and chronic inflammation is clearly explained, although some of the details of the action of eicosanoids and oxygen radicals are incorrect. This may be because the author has not consulted recent source material: a 1979 article on 'chemical messengers' (Chapter 2, reference list) and pre-1983 papers on oxygen radicals are not the best source of current information.

By contrast, Chapter 4 is particularly valuable. The author gives a simple but clear account of the various models for assessing anti-inflammatory activity, explaining their advantages and problems.

The 'meat' of the book is in section II. The author carefully reviews the scientific literature on the existence of anti-inflammatory compounds in plants and marine organisms, and provides a most valuable literature compilation. Full structural formulae of many compounds are also given. The classes of compounds dealt with include the alkaloids, flavonoids (with an interesting discussion of their radical-scavenging ability, on page 145), terpenoids and steroids, such as asterosaporin (from starfish). Chapter 9 deals with reports on the anti-inflammatory activity of crude plant extracts, which is followed by a discussion (Chapter 10) of how the active agents can be extracted from crude material. The use of plant tissue cultures, to give more reliable sources of chemicals, is discussed in Chapter 11. The last chapter deals with diet and arthritis, and it seems somewhat out of place in the present volume, especially as one of the papers discussed in detail (Panush et al.) is not included in the reference list.

Despite the several problems with this book, the author has performed a useful service in drawing together such a wide variety of material about plant and marine anti-inflammatory agents. He has produced a helpful reference manual, ending with a list of species and a good index.

B. Halliwell

Prostaglandins, Leukotrienes and the Immune Response

by John L. Ninnemann

Cambridge University Press; Cambridge, New York, 1988

xii + 220 pages. £25.00

I am pleased to recommend this slim but attractively presented and reasonably priced book to all who are interested in the key role of eicosanoids as regulators of immune reactions and inflammation. This is a complex and rapidly growing field, and Dr Ninnemann has done a terrific job in bringing together a mass of widely scattered literature to make a coherent if slightly idiosyncratic account.

These days single author monographs are comparatively rare in the bioscience literature, so it is especially pleasing to be able to say how well the virtues of consistency and clarity of a single author work are upheld. A major plus of the book is its readability and depth of treatment. The author has drawn plentifully on original data (up to late 1986) in the form of graphs and tables and this adds a much greater sense of immediacy to the text.

Divided into 10 chapters, the book provides a brief general survey of eicosanoid formation and assay, the biology of monocytes, macrophages and lymphocytes and the role of neutrophil granulocytes in inflammation. This general background permits a more detailed analysis in the second half of the book of the role of eicosanoids in cancer, in the immunological rejection of transplanted tissues and in immune responses involving inflammatory diseases and allergy. The general conclusion from all these studies is that certain prostaglandins have very powerful negative feedback modulatory actions on vital immune regulatory processes (e.g., to